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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,076	02/19/2004	Chun-Cheng Lin	10011-00048	4532
746/03 7590 07/22/2009 IPC Intellectual Property Connections, INC. 299 Old County Road, Suite 28 San Carlos, CA 94070				
EXAMINER				
ARNOLD, ERNST V				
ART UNIT		PAPER NUMBER		
1616				
MAIL DATE		DELIVERY MODE		
07/22/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/782,076

Applicant(s)

LIN ET AL.

Examiner

ERNST V. ARNOLD

Art Unit

1616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/16/09 has been entered.

Withdrawn rejections:

Applicant's amendments and arguments filed 4/16/09 are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed below is herein withdrawn. Applicant has cancelled the previous claims thus rendering the rejections moot.

Claims 1-20 have been cancelled and claim 21-40 are new.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 26 and 36 recite "Shiga-like toxin". It is unclear how like or unlike the toxin is to Shiga. Thus the metes and bounds are unclear

and indefinite. The Examiner will examine the claims as they read on Shiga toxin.

Correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 40 recites the limitation "the lectin" in line 1. There is insufficient antecedent basis for this limitation in the claim. There is no lectin in claim 38.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 21-25, 29, 30, 34, 35, 37 and 38 are rejected under 35 U.S.C. 102(a) as being anticipated by Lin et al. JACS 2002, 124, 3508-3509.

Lin et al. disclose gold nanoparticle glycosylated with a plurality of saccharide molecules (mannose) that can bind mannose specific adhesin FimH from the bacteria *E. Coli* (see scheme 1 and appropriate text). The composition doesn't have any iron and is not magnetic. It does not matter where the infectious agent is located because this is a composition claim. Thus, claims 21-25, 29, 30, 34, 35, 37 and 38 are anticipated

Claim Rejections - 35 USC § 102

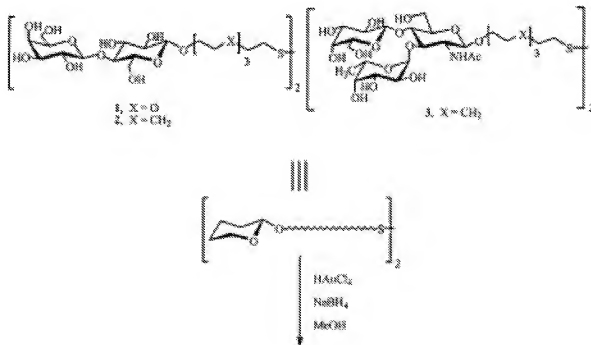
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

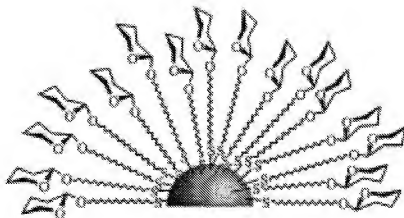
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21, 22, 23, 31, 33, 35, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by de la Fuente et al. (Angew Chem 2001, 113 (12), 2317-2321).

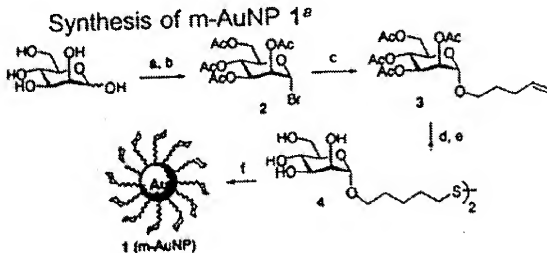
De la Fuente et al. disclose gold glyconanoparticles as water soluble polyvalent models to study carbohydrate interactions (title and scheme 1). As can be seen in Scheme 1, a plurality of mono-, -oligo- and poly-saccharides attached to a gold particle is rendered obvious by de la Fuente.





Scheme 1. Preparation of gold (gray hemisphere) glyconanoparticles.

Scheme 1 looks remarkably similar to Applicant's own figure 1 reproduced below:



The composition doesn't have any iron and is not magnetic. It does not matter where the infectious agent is located, bacteria, virus etc... or host organism because

this is a composition claim. De la Fuente et al. Disclose the conjugates are useful for probing protein-carbohydrate interactions (page 2318-2322).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over de la Fuente et al. (Angew Chem 2001, 113 (12), 2317-2321) in view of Lin et al. (JACS 2002, 124, 3508-3509) and Benhamou (Colloidal Gold 1989 Academic Press, Inc, Sand Diego, CA chapter 4 pages 95-141) and Sandvig et al. (The Journal of Cell Biology 1989, 108, 1331-1343).

Applicant claims:

(New): A saccharide-conjugated nanoparticle comprising:

- (a) a core gold nanoparticle, comprising gold atoms, without Fe atoms and having no magnetic property; and
- (b) a plurality of saccharide molecules attached to the core gold nanoparticle, wherein each of the saccharide molecules has a specific binding affinity to a target protein

Determination of the scope and content of the prior art

(MPEP 2141.01)

The references of Lin et al. and de la Fuente et al. are discussed in detail above and those discussions are hereby incorporated by reference.

Benhamou teaches the concept of binding lectin with gold nanoparticles and that the lectin has a high affinity for sugar residues as shown in Figure 1, page 111 and page 98, carbohydrate binding specificity of lectins and Table 1, page 99).

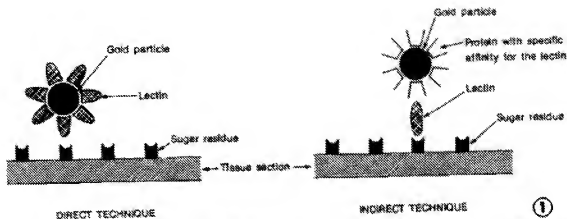


Fig. 1. Direct and indirect lectin-gold labeling. In the direct technique, the lectin molecules tagged to colloidal gold will interact with their specific sugars present at the exposed surface of the tissue section. In the indirect technique, the unlabeled lectin will first react with its corresponding sugar and then a gold-labeled protein will interact with the lectin.

In fact, glucose and mannose are disclosed for concanavalin A lectin (table 1 page 99 and page 119, localization of mannose/glucose residues).

Sandvig et al. establish the concept of binding Shiga toxin with gold nanoparticles (title, abstract and page 1332 Immunocytochemical detection of shiga toxin and relevant text).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

1. The difference between the instant application and de la Fuente et al. is that de la Fuente et al. do not expressly teach a target protein such as Shiga toxin or FimH or the lectin Concanavalin A. This deficiency in de la Fuente et al. is cured by the teachings of Lin et al., Benhamou, and Sandvig.

Finding of prima facie obviousness

Rational and Motivation (MPEP 2142-2143)

1. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to make the composition of de la Fuente wherein the target protein is a target protein such as Shiga toxin or FimH or the lectin Concannavalin A, as suggested by Lin et al., Benhamou, and Sandvig, and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because de la Fuente suggest the use of these glycosylated gold nanoparticles to probe protein carbohydrate interactions and the cited reference teach probing Shiga toxin, FimH and lectins with gold nanoparticles. While Benhamou may not teach gold particles with saccharides attached, the concept that lectins bind saccharides is present and the primary reference teaches binding saccharides to the surface of gold particles. Thus it is not leap of faith that one of ordinary skill in the art could put the proper sugar on the gold particle for recognition by the lectin. With respect to instant claim 32, in the absence of evidence to the contrary the oligosaccharide of de la Fuente is a Pk antigen because all that is required is that it is an oligosaccharide.

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of

ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernst V. Arnold whose telephone number is 571-272-8509. The examiner can normally be reached on M-F (7:15 am-4:45 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ernst V Arnold/
Examiner, Art Unit 1616